

CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

- 1 1. A computer implemented collaborative engineering environment (CEE)
2 for providing an inter-enterprise collaborative mechanism for
3 organizations developing and maintaining complex system products, the
4 CEE providing a federated architecture linking multiple systems and
5 applications together to enable collaboration among enterprise members,
6 comprising:
7 a database defined by an associative information model for
8 providing a persistent understanding of product and program information,
9 assets and tools available in the enterprise;
10 an information management service providing controlled access to
11 the database for collaboration and;
12 an information transformation service receiving, sending and
13 formatting data and acting as a bi-directional link between the database
14 and members of the enterprise, wherein access to the data in the database
15 is managed by the information management service, and wherein the
16 information transformation service provides information structuring, and
17 information mapping and exchange for domain-specific tools; and
18 at least one domain user interface linking members of a domain in
19 the enterprise with information in the database, wherein the information
20 available to each member is information necessary for the member to
21 complete role and team based tasks, and wherein a domain user interface
22 comprises access to at least one domain-specific tool, wherein each tool
23 communicates information with the database via the information
24 transformation service,
25 wherein members have immediate access to data generated by any

26 member of the enterprise, as authorized by the associative information
27 model defining database access and control.

1 2. A CEE as recited in claim 1, wherein each member communicates with
2 the enterprise for collaboration using a standard web interface, the web
3 interface being customized for programs, roles and teams.

1 3. A CEE as recited in claim 1, wherein the information management
2 service provides access control, security, search mechanisms, concurrency
3 control, and versioning for data in the database.

1 4. A CEE as recited in claim 1, wherein the CEE is built with a layered
2 software architecture comprising a database management system (DBMS),
3 a product data management system (PDM) augmenting the DBMS with
4 engineering specific information management capabilities, and the
5 information transformation service utilizes an extensible infrastructure for
6 interfacing engineering or management applications into the PDM
7 environment.

1 5. A CEE as recited in claim 1, wherein data in the database have a
2 corresponding program identifier, thereby allowing multiple programs
3 within the enterprise to access a same CEE.

1 6. A CEE as recited in claim 1, wherein the CEE sends/receives
2 information to users in a domain area, the domain area not being
3 implemented in the collaboration environment.

1 7. A CEE as recited in claim 6, wherein the database associative
2 information model defines data for domain areas unintegrated into the
3 CEE by a domain user interface.

4 an enterprise to capture physical, functional and environmental system
5 requirements, wherein domain experts provide input into the specifying
6 step for their particular domain;
7 mapping the captured requirements into a database schema for a
8 product data management system (PDM);
9 generating an information transformation service between data to
10 be stored in a database managed by the product data management system
11 and tools used by domain specialists in performance of domain tasks,
12 wherein information is stored in the database by various members of the
13 enterprise based on the associative information model for the various
14 member's domain area;
15 accessing data in the database by members of the enterprise,
16 wherein the data accessed is part of a current baseline and the data
17 retrieved is current for all members accessed the data; and
18 performing domain tasks by a member of the enterprise using
19 domain specific applications, wherein results from the domain specific
20 application are properly formatted by the information transformation
21 service and stored in the database managed by the PDM, the data being
22 immediately accessible to other members of the enterprise.

1 13. A method as recited in claim 12, wherein the CEE enables immediate
2 information exchange in the access step for one or more domains in the
3 group of proposal teams, program management, system engineers,
4 software developers, hardware developers, system integrators, test and
5 integration engineers, support engineers, teammates, partners,
6 subcontractors, suppliers, users, and customers.

1 14. A method as recited in claim 13, wherein the access step uses a
2 customizable standard web-based interface to provide members of the
3 enterprise access to collaborative information.

1 16. A computer implemented web-centric collaborative engineering
2 environment (CEE) implemented using client/server technology for
3 providing an inter-enterprise collaborative mechanism for organizations
4 developing, integrating or maintaining complex system products, the CEE
5 providing a federated architecture linking multiple systems and
6 applications together to enable collaboration among enterprise members,
7 comprising:

an information management service residing on a server computer providing controlled access to the database for collaboration using an access control scheme defined by policies of the enterprise, the information management service using an object oriented database management system for access and control of the database and;

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at least one domain user interface residing on at least one client computer linking members of the enterprise with information in the database, wherein the information available to each member is information necessary for the member to complete role and team based tasks, and wherein a domain user interface allows a member access to at least one domain-specific tool, wherein each tool communicates necessary information with the database via the information transformation service, and wherein an implemented domain user interface is customized for a domain area in the group of proposal teams, program management, system engineers, software developers, hardware developers, system integrators, testing and integration engineers, support engineers, sub-contractors, teammates, suppliers and partners, users and customers.

1 17. A CEE as recited in claim 16, wherein data in the database have a
2 corresponding program identifier, thereby allowing multiple programs
3 within the enterprise to access a same CEE.

